

SPECIFICATION

- **DESCRIPTIVE TITLE OF THE INVENTION.**

SOLAR POWERED (PHOTOVOLTAIC) ELECTRO LUMINESCENT EXTRUDED LIGHTING DEVICE.

- **CROSS REFERENCE TO RELATED APPLICATIONS.**

**A PROVISIONAL APPLICATION FOR PATENT OF THE SAME DEVICE WAS SUBMITTED AND GIVEN THE FOLLOWING APPLICATION NUMBER
60/433,274**

FILING DATE: 12-16-02.

CONFIRMATION NUMBER: 8507

CUSTOMER NUMBER: 30176

- **STATEMENT REGARDING FED SPONSORED R&D: NONE**
- **SEQUENCE LISTING: NONE**

BACKGROUND OF INVENTION:

THIS INVENTION IS CONCERNED WITH THE DOUBLE CONVERSION OF LIGHT OR PHOTONS INTO ELECTRICITY, STORAGE OF IT AND THE CONVERTING OF ELECTRICITY BACK INTO PHOTONS.

WHILE THE DESCRIBED CONVERSION WAS TECHNICALLY PREVIOUSLY POSSIBLE, THIS INVENTION RELATES TO ACHIEVING SAID CONVERSION USING A DOUBLE SURFACED, (UPPER AND LOWER) COMBINATION OF TECHNOLOGIES, SAID TECHNOLOGIES ARE ARRANGED IN AN EXTRUDED, LAMINATED AND/OR LINEARLY PRODUCED COMPONENTS, TO ILLUMINATE SIGNS OR ANY GRAPHICALLY REPRODUCED INFORMATION BOARD.

SUMMARY OF INVENTION

SOLAR POWERED (PHOTOVOLTAIC) - ELECTRO LUMINESCENT EXTRUDED DEVICE.

THE PRESENT INVENTION APPLICATION IS TO PROVIDE GRID-LESS-POWERED ILLUMINATION BY COMBINING THE RESULTS OF THREE PHYSICAL MATERIAL EFFECTS:

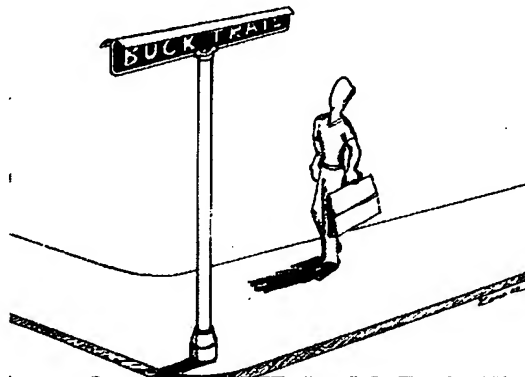
- **PHOTO-VOLTAIC MATERIALS,**
- **ELECTRO-LUMINESCENT MATERIALS**
AND
- **FORMED-BY-EXTRUSION MATERIALS.**

THE EXTRUDED CARRIER OF THE BODY OF THE FIXTURE COULD BE EITHER MADE OF ALUMINUM OR PLASTIC ON A TECHNICALLY SIMILAR PROCESS (EXTRUSION)

HOWEVER, THIS INVENTION IN SOME OF ITS APPLICATIONS, USES THE TRANSPARENCY OF THE PLASTIC (POLYCARBONATE OR SIMILAR) TO CONCEAL A COMBINATION OF PHOTOVOLTAIC AND ELECTROLUMINESCENT "TAPE" OR LINEAR MATERIAL UNDER ITS EXTRUDED SHAPE AND THEREFORE, IT PROVIDES WITH A WEATHER-PROOF PERFORMANCE OF THE DEVICE.

THE CONVERSION OF SOLAR LIGHT INTO "NIGHT" LIGHT IS CONTROLLED BY AN ELECTRONIC COMPONENTS CONTAINING:

- **PHOTO CELL OR LIGHT MEASURING DEVICES,**
- **BATTERIES OR "ENERGY STORAGE UNITS"**
AND
- **A CIRCUITRY OR "INVERTER DRIVER" THAT RAISES THE VOLTAGE FROM THE STORAGE UNITS INTO THE HIGHER VOLTAGE-MINIMUM AMPERAGE WHICH IS REQUIRED TO PRODUCE THE ELECTRO LUMINESCENCE EFFECT.**



TYPICAL APPLICATION

DESCRIPTION OF DRAWINGS

AN EMBODIMENT OF THE PRESENT INVENTION WILL NOW BE DESCRIBED, BY WAY OF EXAMPLE, WITH REFERENCE TO THE ACCOMPANYING DRAWINGS WHICH ARE: A CROSS-SECTION (FIG. 1), AN ASSEMBLY (FIG.2) AND AN EXPLODED VIEW (FIG.3) OF SAID INVENTION.

REFERRING NOW TO THE DRAWINGS, A VERTICAL SIGN PLATE (7) [SIMILAR TO THOSE OF STREET NAME SIGNS] IS PROVIDED WITH A LIGHT FIXTURE MADE OF AN EXTRUDED SECTION HOUSING (1) IN WHICH IS MOUNTED A TABLET OR LAMINATION CONTAINING PHOTOVOLTAIC CELLS(2) ON ITS UPPER SURFACES AND ELECTROLUMINESCENT MATERIALS(4) ON ITS LOWER SURFACES.

THE EXTRUDED HOUSING SECTION ALSO PERFORMS THE FUNCTION OF CARRYING AND PROTECTS FROM WEATHER THE CYLINDRICALLY SHAPED (SIMILAR TO BATTERIES) ELECTRONIC COMPONENTS (3) SAID ELECTRONIC COMPONENTS PERFORM THE FOLLOWING FUNCTIONS:

- REGULATE THE HARNESSING OF THE ELECTRICITY PRODUCED BY THE SOLAR PANELS AND USE IT TO PROPERLY CHARGE THE BATTERIES OR ANY OTHER STORING DEVICE (I.E. FUEL CELLS).
- STORAGE OF ENERGY (CURRENTLY NICA0 BATTERIES).
- SENSING OF THE AMOUNT OF AMBIENCE LIGHT ON ITS SURROUNDING BY MEANS OF ESTIMATING THE ACTIVITY IN THE PHOTOVOLTAIC CELLS.
- TRIGGERING AN INITIAL DISCHARGE TO START AN INVERTER CIRCUIT.
- INVERTING AND RAISING THE CURRENT TO A SUITABLE VOLTAGE FOR THE ELECTRO LUMINESCENCE EFFECT TO OCCUR.
- MONITORING THE CONSUMPTION OF THE SYSTEM, THE VOLTAGE LEVEL OF THE BATTERIES, AND THE DURATION OF TIME OF OPERATION.

THE INVENTION HAS 2 CAPS (5) TO RETAIN THE ENDS OF THE FIXTURE AND TO SECURE THE COMPONENTS WITHIN THE LINEAR BODY OF THE DEVICE.

ON TOP AND BOTTOM OF THE FIXTURE THE EXTRUDED BODY HAS A SECTIONED INDENTATION THAT IS THE UPPER AND LOWER MOUNTING MECHANISM ITSELF (6), SAID SYSTEM ALLOWS TO ATTACH UPPER AND LOWER BRACKETS TO SECURE THE FIXTURE TO THE SIGN THAT IT WILL ILLUMINATE, SAID UPPER BRACKET ALSO ALLOWS FOR ANOTHER COMPLETE FIXTURE TO BE ATTACHED ON TOP OF THIS INVENTION AND IN DIFFERENT RADIAL POSITION RESPECT TO THE FIRST UNIT.

DETAILED DESCRIPTION

SOLAR PANELS (PHOTOVOLTAIC PLATES) ARE USED REGULARLY ON DIFFERENT APPLICATIONS AND ARE MOUNTED ON DIFFERENT SUBSTRATES OF MATERIALS, TRADITIONALLY GLASS AND CERAMIC PLATES.

IN LATER DEVELOPMENTS, ONE NEW WAY OF MOUNTING OR DEPOSITING THE SILICON CRYSTALS THAT PRODUCES THE PHOTOVOLTAIC EFFECT, IS TO USE DIFFERENT PLASTIC MATERIALS, URETHANES AND EPOXIES PRIMARILY AS THE CARRYING SUBSTRATE.

WHILE TRADITIONALLY THE PHOTOVOLTAIC PANELS CONSIST OF FLAT SURFACES, SAID NEW SUBSTRATES ARE MORE SUITABLE FOR ADAPTING TO DIFFERENT SHAPES AND CONTOURS IN COMPLEX 3-D SURFACES, EVEN TO BE WOVEN IN SIMPLE FABRIC PATTERNS.

SAID LATER DEVELOPMENTS ALLOW ALSO A MUCH THINNER THICKNESS ON PHOTOVOLTAICS WITH SIMILAR PERFORMANCE AS USE TO BE COMMON WITH GLASS MOUNTED PLATES.

ONE MATERIAL OR PROCESS OF MATERIALS ALLOWS DEPOSITING PV (PHOTOVOLTAICS) ONTO PLASTICS, (MYLAR OR POLYESTER LAMINATED MATERIALS) TO PRODUCE WHAT IS KNOWN AS A "FLEXIBLE PANEL"

WHILE SAID PV'S COULD PRODUCE A DIFFERENCE OF POTENTIAL (ELECTRIC ENERGY), IT HAS TO BE HARNESSSED , STORED OR DISTRIBUTED WITH THE USE OF DIFFERENT CIRCUITS AND OTHER ELECTRONIC DEVICES, OTHERWISE SAID PV PANELS REMAIN AT REST.

AS A PARALLEL DEVELOPMENT, THE PRINCIPLE OF ELECTRO LUMINESCENT MATERIALS OR "EL" WHICH HAVE THE EXACT OPPOSITE RESULT OF CONVERTING ELECTRIC ENERGY INTO PHOTONS OR LIGHT, HAS ALSO GONE INTO THE PROCESS OF MANUFACTURING BY PRINTING DIFFERENT LAYERS OF ELECTRICAL SENSITIVE PHOSPHORESCENT MATERIALS ONTO FLEXIBLE SUBSTRATES LIKE PLASTIC PANELS AND TAPES.

THE PRESENT INVENTION IS AN EXTRUDED SECTIONED LIGHT FIXTURE THAT HOLDS A DOUBLE SIDED LAMINATION WHICH COLLECTS WITH A GRID OF PHOTOVOLTAICS ON ONE SIDE THE PHOTONS FROM SUN'S DAYLIGHT (OR ANY OTHER PHOTON SOURCE) AND STORES AND PROCESSES SAID ENERGY INTO A CIRCUIT AND BATTERY COMBINATION DEVICE LOCATED IN A CAVITY OF THE EXTRUDED BODY, TO RELEASE IT THROUGH ITS ELECTROLUMINESCENCE UNDERSIDE AT PRE-PROGRAMMED SCHEDULES (NORMALLY STARTING AT DUSK THROUGH THE NIGHT.)

THE COMPLETE DEVICE THEN IS COMPRISED BY THE FOLLOWING ELEMENTS:

AN EXTRUDED CASE OR BODY OF A SUITABLE MATERIAL, (METAL OR PLASTIC) WITH CAVITIES AND RAILS TO CARRY:

- **PHOTOVOLTAICS ON THE UPPER FACING SURFACES.
ELECTRONIC COMPONENTS, (CHARGING, STORAGE AND
INVERTING DEVICES) IN THE MIDDLE SECTIONS.**
- **ELECTRO LUMINESCENT DEVICES FACING DOWN AND-OR
SIDEWAYS.**
- **CAP ENDS TO SECURE AND CONNECT COMPONENTS TO EACH
OTHER AND TO ENSURE INSULATION OF SAID COMPONENTS TO
WEATHER CONDITIONS.**
- **UPPER AND LOWER MOUNTING OR ATTACHMENT SYSTEMS.**